

1 CLAIMS

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3 What is claimed is:

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5 1. A method of making a cased wellbore comprising at least
6 the steps of:

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8 assembling a lower segment of a drill string comprising
9 in sequence from top to bottom a first hollow segment of
10 drill pipe, a latching subassembly means possessing multiple
11 stabilizer ribs attached to the exterior of said latching
12 subassembly means to stabilize the drill string during
13 drilling, and a rotary drill bit having at least one mud
14 passage for passing drilling mud from the interior of the
15 drill string to the outside of the drill string;

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17 rotary drilling the well into the earth to a
18 predetermined depth with the drill string by attaching
19 successive lengths of hollow drill pipes to said lower
20 segment of the drill string and by circulating mud from the
21 interior of the drill string to the outside of the drill
22 string during rotary drilling so as to produce a wellbore;

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24 after said predetermined depth is reached, pumping a
25 latching float collar valve means down the interior of the
26 drill string with drilling mud until it seats into place
27 within said latching subassembly means;

28
29 pumping a bottom wiper plug means down the interior of
30 the drill string with cement until the bottom wiper plug
31 means seats on the upper portion of the latching float collar
32 valve means so as to clean the mud from the interior of the
33 drill string;

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1 pumping any required additional amount of cement into
2 the wellbore by forcing it through a portion of the bottom
3 wiper plug means and through at least one mud passage of the
4 drill bit into the wellbore;

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6 pumping a top wiper plug means down the interior of the
7 drill string with water until the top wiper plug seats on the
8 upper portion of the bottom wiper plug means thereby cleaning
9 the interior of the drill string and forcing additional
10 cement into the wellbore through at least one mud passage of
11 the drill bit;

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13 allowing the cement to cure;

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15 thereby cementing into place the drill string to make a
16 cased wellbore.

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19 2. Rotary drilling apparatus to drill a borehole into the
20 earth comprising a hollow drill string possessing at least
21 one drilling stabilizer means, the drill string attached to a
22 rotary drill bit having at least one mud passage for passing
23 the drilling mud from within the hollow drill string to the
24 borehole, a source of drilling mud, a source of cement, and
25 at least one latching float collar valve means that is pumped
26 with the drilling mud into place above the rotary drill bit
27 to install said latching float collar means within the hollow
28 drill string above said rotary drill bit that is used to
29 cement the drill string and rotary drill bit into the earth
30 during one pass into the formation of the drill string to
31 make a steel cased well.

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1 3. A method of drilling a well from the surface of the
2 earth and cementing a drill string into place within a
3 wellbore to make a cased well during one pass into formation
4 using an apparatus comprising at least a hollow drill string
5 possessing at least one drilling stabilizer means, the drill
6 string attached to a rotary drill bit, said bit having at
7 least one mud passage to convey drilling mud from the
8 interior of the drill string to the wellbore, a source of
9 drilling mud, a source of cement, and at least one latching
10 float collar valve assembly means, using at least the
11 following steps:

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13 pumping said latching float collar valve means from the
14 surface of the earth through the hollow drill string with
15 drilling mud so as to seat said latching float collar valve
16 means above said drill bit; and

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18 pumping cement through said seated latching float collar
19 valve means to cement the drill string and rotary drill bit
20 into place within the wellbore, whereby at least a portion of
21 said drill string is centralized in said well while cementing
22 said drill string into place within said wellbore by the
23 presence of said drilling stabilizer means.

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26 4. A method for drilling and lining a wellbore comprising:
27 drilling the wellbore using a drill string, the drill string
28 having an earth removal member operatively connected thereto
29 and a casing portion for lining the wellbore; stabilizing the
30 drill string while drilling the wellbore; locating the casing
31 portion within the wellbore; and maintaining the casing
32 portion in a substantially centralized position in relation
33 to a diameter of the wellbore.

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1 5. The method of Claim 4 wherein following the lining of
2 said wellbore with said casing portion, said casing portion
3 is cemented into place using at least the following steps:
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5 (a) pumping a latching float collar valve means from the
6 surface of the earth through said drill string with drilling
7 mud so as to seat said latching float collar valve means
8 above said earth removal member, wherein said earth removal
9 member possesses at least one mud passage to convey drilling
10 mud from the interior of the drill string to the wellbore;
11 and
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13 (b) pumping cement through said seated latching float
14 collar valve means to cement the drill string and the earth
15 removal member into place within the wellbore.
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